

What is claimed:

1. An electro-kinetic air conditioner device, comprising:
  - an inner hollow cylindrical mesh collector electrode having a first radius;
  - a grounded outer hollow cylindrical mesh electrode having a second radius that is larger than said first radius, said outer hollow cylindrical mesh electrode surrounding inner hollow cylindrical mesh electrode;
  - at least one emitter electrode within and generally parallel to said inner hollow cylindrical collector electrode; and
  - a voltage source to provide a high voltage potential difference between each said emitter electrode and said inner hollow cylindrical mesh electrode;
  - wherein a flow of air including ions and charged particles is produced from each said emitter electrode toward an adjacent portion of said hollow mesh collector electrode; and
  - wherein at least a portion of the charged particles are attracted to and collect on said hollow mesh collector electrode, thereby cleaning the air.
2. The device of claim 1, wherein:
  - said voltage source provides a high negative voltage to said inner hollow cylindrical mesh collector electrode; and
  - each said emitter electrode is grounded.
3. The device of claim 1, wherein each said emitter electrode comprises a wire-shaped electrode.

4. The device of claim 1, wherein each said emitter electrode is located closer to a circumference of said inner hollow cylindrical mesh collector electrode than to a radial center of said inner hollow cylindrical mesh collector electrode.
5. The device of claim 1, wherein said outer hollow cylindrical mesh electrode includes an electrically conductive electrode mesh covered by an insulating dielectric material.
6. The device of claim 5, wherein said dielectric material is coated with an ozone reducing catalyst.
7. The device of claim 1, wherein said outer hollow cylindrical mesh electrode is coated with an ozone reducing catalyst.
8. An electro-kinetic air conditioner device, comprising:
  - a inner hollow mesh electrode;
  - a outer hollow mesh electrode surrounding said inner hollow mesh electrode;
  - at least one emitter electrode within said inner hollow mesh electrode; and
  - a voltage source to provide a high voltage potential difference between each said emitter electrode and said inner hollow mesh electrode.
9. The device of claim 8, wherein said outer hollow mesh electrode is grounded.

10. The device of claim 9, wherein each said emitter electrode is generally parallel to said inner hollow mesh electrode.

11. The device of claim 10, wherein each said emitter electrode is closer to a mesh wall of said inner hollow mesh electrode than to a radial center of said inner hollow mesh electrode.

12. The device of claim 10, comprising at least two said emitter electrodes, and wherein each said emitter electrode is generally arranged equiangularly about said inner hollow mesh electrode such that ionization regions formed about emitter electrodes do not interfere with one another.

13. The device of claim 8, wherein:  
said voltage source provides a high negative voltage to said inner hollow mesh electrode; and  
each said emitter electrode is grounded.

14. The device of claim 8, wherein each said emitter electrode comprises a wire-shaped electrode.

15. The device of claim 8, wherein said outer hollow mesh electrode includes an electrically conductive electrode mesh covered by an insulating dielectric material.

16. The device of claim 15, wherein said dielectric material is coated with an ozone reducing catalyst.

17. The device of claim 8, wherein said outer hollow mesh electrode is coated with an ozone reducing catalyst.
18. An electro-kinetic air conditioner device, comprising:  
a hollow mesh collector electrode;  
at least one emitter electrode within said hollow mesh collector electrode; and  
a voltage source to provide a high voltage potential difference between each said emitter electrode and said hollow mesh collector electrode.
19. The device of claim 18, wherein each said emitter electrode is generally parallel to said hollow mesh collector electrode.
20. The device of claim 19, further comprising an outer hollow mesh electrode surrounding said hollow mesh collector electrode.
21. The device of claim 20, wherein said outer hollow mesh electrode is insulated and grounded.
22. The device of claim 18, wherein:  
a flow of air including ions and charged particles is produced from each said emitter electrode toward an adjacent mesh wall of said hollow mesh collector electrode; and  
at least a portion of the charged particles are attracted to and collect on said hollow mesh collector electrode, thereby cleaning the air.

23. An electro-kinetic air conditioner device, comprising:
- an inner hollow cylindrical collector electrode, that allows air to pass therethrough, having a first radius;
  - a grounded outer hollow cylindrical electrode, that allows air to pass therethrough, having a second radius that is larger than said first radius, said outer hollow cylindrical electrode surrounding inner hollow cylindrical electrode;
  - at least one emitter electrode within said inner hollow cylindrical collector electrode; and
  - a voltage source to provide a high voltage potential to said inner hollow cylindrical electrode;
- and
- wherein a flow of air is produced from each said emitter electrode toward an adjacent portion of said hollow collector electrode.
24. An electro-kinetic air conditioner device, comprising:
- a inner hollow electrode that allows air to pass therethrough;
  - at least one emitter electrode within said inner hollow electrode; and
  - a voltage source to provide a high voltage potential to said inner hollow electrode.
25. The device of claim 24, wherein each said emitter is grounded.
26. The device of claim 24, further comprising an outer hollow electrode that allows air to pass therethrough, surrounding said inner hollow electrode.

27. The device of claim 26, wherein each said emitter and said outer hollow electrode are grounded.

28. An electro-kinetic air conditioner device, comprising:

a housing;

a inner hollow mesh collector electrode supported by said housing;

a grounded and insulated outer hollow mesh electrode, surrounding said first hollow mesh electrode, also supported by said housing;

at least two emitter electrodes each within and generally parallel to said first hollow cylindrical electrode; and

a voltage source;

wherein said inner hollow cylindrical mesh collecting electrode is removable for cleaning from a resting position supported by said housing to a location outside said housing; and

wherein said high voltage source provides a high voltage potential difference, between said emitter electrodes and said inner hollow cylindrical mesh collector electrode, when said inner hollow mesh electrode is in the resting position.

29. The device of claim 28, wherein said housing includes a top having an opening, and wherein said inner hollow cylindrical mesh collecting electrode is removable through said opening.

30. The device of claim 29, further comprising a handle attached to said inner hollow cylindrical mesh collector electrode to assist with removal of said inner hollow cylindrical mesh collector electrode.

31. The device of claim 28, further comprising a handle to assist with removal of said inner hollow cylindrical mesh collector electrode.

32. A method for providing an electro-kinetic air transporter-conditioner system, comprising:  
providing an inner hollow cylindrical mesh collector electrode having a first radius;  
providing an outer hollow cylindrical mesh electrode having a second radius that is larger than said first radius, said outer hollow cylindrical mesh electrode surrounding said inner hollow cylindrical mesh collector electrode;  
providing at least one emitter electrode within and generally parallel to said inner hollow cylindrical mesh collector electrode;  
providing a high voltage potential difference between each said emitter electrode and said inner hollow cylindrical mesh electrode; and  
grounding said outer hollow cylindrical mesh electrode.

33. A method for providing an electro-kinetic air transporter-conditioner system, comprising:  
providing an inner hollow mesh collector electrode;  
providing an outer hollow mesh electrode surrounding said inner hollow mesh collector electrode;  
providing at least one emitter electrode within and generally parallel to said inner hollow mesh collector electrode;  
providing a high voltage potential difference between each said emitter electrode and said inner hollow mesh collector electrode; and

grounding said outer hollow cylindrical mesh electrode.